

IN THE CLAIMS:

Please substitute the original claims 1-56 with the following claims:

1. A synthetic middle distillate cut having less than 9 mass%, as determined according to IP 391 or ASTM D 5186 standards, aromatics content, the synthetic middle distillate cut having less than 8.99 mass% monocyclic aromatics content and less than 0.01 mass polycyclic aromatic content.
2. A synthetic middle distillate cut as claimed in claim 1, having an isoparaffins to n-paraffins mass ratio of between about 1:1 to about 9:1.
3. A synthetic middle distillate cut as claimed in claim 2, wherein the isoparaffins to n-paraffins mass ratio is between about 2:1 to about 6:1.
4. A synthetic middle distillate cut as claimed in claim 2, wherein the isoparaffins to n-paraffins mass ratio is 4:1.
5. A synthetic middle distillate cut as claimed in claim 1, wherein the synthetic distillate is derived from a FT primary product.
6. A synthetic middle distillate cut as claimed in claim 2, comprising more than 50 mass% isoparaffins, wherein the isoparaffins are predominantly methyl and/or ethyl and/or propyl branched.
7. A synthetic middle distillate cut as claimed in claim 2, wherein the gradient of an isoparaffins to n-paraffins mass ratio profile of the synthetic middle distillate cut increases from about 1:1 for C<sub>8</sub> to 8.54:1 for C<sub>15</sub> and decrease again to about 3:1 for C<sub>18</sub>.
8. A synthetic middle distillate cut as claimed in claim 7, wherein a fraction of the synthetic middle distillate cut in the C<sub>10</sub> to C<sub>18</sub> carbon number range has a higher ratio of isoparaffins to n-paraffins than a C<sub>8</sub> to C<sub>9</sub> fraction of the synthetic middle distillate cut.
9. A synthetic middle distillate cut as claimed in claim 8, wherein the isoparaffins to n-paraffins mass ratio of the C<sub>10</sub> to C<sub>18</sub> fraction is between 1:1 and 9:1.

10. A synthetic middle distillate cut as claimed in claim 7, wherein the isoparaffins to n-paraffins mass ratio is about 8.54:1 for a C<sub>15</sub> fraction of the synthetic middle distillate cut.
11. A synthetic middle distillate cut as claimed in claim 7, wherein a C<sub>19</sub> to C<sub>24</sub> fraction of the middle distillate cut has a mass ratio range of isoparaffins to n-paraffins of between 3.3:1 and 5:1.
12. A synthetic middle distillate cut as claimed in claim 11, wherein the C<sub>19</sub> to C<sub>24</sub> fraction of the middle distillate cut has a mass ratio range of isoparaffins to n-paraffins of between 4:1 and 4.9:1.
13. A synthetic middle distillate cut as claimed in claim 7, wherein the mass ratio of isoparaffins to n-paraffins is adjusted by controlling the blend ratio of hydrocracked to straight run components of the synthetic middle distillate cut.
14. A synthetic middle distillate cut as claimed in claim 13, wherein the isoparaffins to n-paraffins mass ratio of the C<sub>10</sub> to C<sub>18</sub> fraction having 30 mass% straight run component is between 1:1 and 2.5:1.
15. A synthetic middle distillate cut as claimed in claim 13, wherein the isoparaffins to n-paraffins mass ratio of the C<sub>10</sub> to C<sub>18</sub> fraction having 20 mass% straight run component is between 1.5:1 and 3.5:1.
16. A synthetic middle distillate cut as claimed in claim 13, wherein the isoparaffins to n-paraffins mass ratio of the C<sub>10</sub> to C<sub>18</sub> fraction having 10 mass% straight run component is between 2.3:1 and 4.3:1.
17. A synthetic middle distillate cut as claimed in claim 13, wherein the isoparaffins to n-paraffins mass ratio of the C<sub>10</sub> to C<sub>18</sub> fraction having substantially only a hydrocracked component is between 4:1 and 9:1.
18. A middle distillate cut as claimed in claim 6, wherein at least some of the isoparaffins are di-methyl branched.
19. A middle distillate cut as claimed in claim 6, wherein at least 30 mass% of the isoparaffins are mono-methyl branched.
20. A middle distillate cut as claimed in claim 19, wherein at least some of the isoparaffins are ethyl branched.

21. A synthetic middle distillate cut as claimed in claim 1, wherein the synthetic distillate is a FT product and the synthetic middle distillate cut is at least 60% biodegradeable within 28 days when using the Modified Sturm Test.

22. A synthetic middle distillate cut as claimed in claim 2, wherein the synthetic distillate is a FT product and the synthetic middle distillate cut is at least 60% biodegradeable within 28 days when using the Modified Sturm Test.

23. A diesel fuel composition including from 10% to 100% of a middle distillate cut as claimed in claim 1.

24. A diesel fuel composition including from 10% to 100% of a middle distillate cut as claimed in claim 2.

25. A diesel fuel composition as claimed in claim 23, including from 0 to 90% of at least one other diesel fuel.

26. A diesel fuel composition as claimed in claim 24, including from 0 to 90% of at least one other diesel fuel.

27. A diesel fuel composition as claimed in claim 23, wherein one of the other diesel fuels is US 2-D grade diesel fuel.

28. A diesel fuel composition as claimed in claim 24, wherein one of the other diesel fuels is US 2-D grade diesel fuel

29. A diesel fuel composition as claimed in claim 23, wherein one of the other diesel fuels is CARB grade diesel fuel.

30. A diesel fuel composition as claimed in claim 24, wherein one of the other diesel fuels is CARB grade diesel fuel

31. A process for producing a readily biodegradable synthetic middle distillate, the process including:

- separating the products obtained from synthesis gas via the FT synthesis reaction into one or more heavier fraction and one or more lighter fraction;
- catalytically processing the one or more heavier fraction under conditions which yield mainly middle distillates;
- separating the middle distillate product of step (b) from the lighter product and heavier product that are also produced in step (b); and

(d) blending the middle distillate fraction obtained in step (c) with at least a portion of the one or more lighter fraction of step (a), or products thereof.

32. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the catalytic processing of step (b) is a hydroprocessing step.

33. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the catalytic processing of step (b) is a hydrocracking step.

34. A process for producing a synthetic middle distillate as claimed in claim 31, including one or more additional step of fractionating at least some of the one or more lighter fraction of step (a), or products thereof, prior to step (d).

35. A process for producing a synthetic middle distillate as claimed in claim 31, including the additional step of hydrotreating at least some of the one or more light fraction of step (a), or products thereof, prior to step (d).

36. A process for producing a synthetic middle distillate as claimed in claim 33, including the additional step of hydrotreating at least some of the one or more light fraction of step (a), or products thereof, prior to step (d).

37. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the one or more heavier fraction of step (a) boils above about 270°C.

38. A process for producing a synthetic middle distillate as claimed in claim 37, wherein the one or more heavier fraction of step (a) boils above about 300°C.

39. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the one or more lighter fraction boils in the range C<sub>5</sub> to the boiling point of the heavier fraction.

40. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the one or more lighter fraction boils in the range 160°C to 270°C.

41. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the product of step (d) boils in the range 100°C to 400°C.

42. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the product of step (d) boils in the range 160°C to 370°C.

43. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the product of step (d) is a diesel fuel.

44. A process for producing a synthetic middle distillate as claimed in claim 36, wherein the product of step (d) is a diesel fuel

45. A process for producing a synthetic middle distillate as claimed in claim 31, wherein the product of step (d) is obtained by mixing the middle distillate fraction obtained in step (c) with at least a portion of the one or more lighter fraction of step (a), or products thereof, in a volume ratio selected to provide a diesel fuel having a required specification.

46. A process for producing a synthetic middle distillate as claimed in claim 45, wherein the product of step (d) is obtained by mixing the middle distillate fraction obtained in step (c) with at least a portion of the one or more lighter fraction of step (a), or products thereof, in a volume ratio of between 1:1 and 9:1.

47. A process for producing a synthetic middle distillate as claimed in claim 46, wherein the product of step (d) is obtained by mixing the middle distillate fraction obtained in step (c) with at least a portion of the one or more lighter fraction of step (a), or products thereof, in a volume ratio of between 2:1 and 6:1.

48. A process for producing a synthetic middle distillate as claimed in claim 47, wherein the product of step (d) is obtained by mixing the middle distillate fraction obtained in step (c) with at least a portion of the one or more lighter fraction of step (a), or products thereof, in a volume ratio of 84:16.